Saskatchewan Agriculture
Agriculture Development Fund

Project Information

91-06076/

EVALUATION OF SPICES AS A POTENTIAL CROP FOR SASKATCHEWAN

(Year 2)

COOPERATOR: Gary Schweitzer
Box 222
ESTON, Saskatchewan S0L 1A0
Ph.: 962-4751

EXTENSION AGROLOGIST: BARRY RAPP
SASK. RURAL DEVELOPMENT
BOX 1690
KINDERSLEY, SASK.S0L 1S0
PHONE: 306 463 2696

ABSTRACT:

The second year of an A.D.F. project designed to evaluate a number of spice crops (anise, caraway, and corriander) under dryland Saskatchewan conditions was completed in 1989.

Growing conditions were below normal in 1989 with traditional crops yielding about 25% below normal. The crops got off to a good start with adequate moisture. However, a seven-week period of hot, dry weather during June and July reduced yields substantially.

A lot more evaluation will be required in order to fully assess the agronomic, further processing and marketing potential of various spice crops.

OBJECTIVE:

To evaluate and assess the agronomic and economic suitability of spice crops grown under Saskatchewan dryland conditions, (caraway, corriander, and anise) and determine the market potential of these crops. The spices would be grown using zero-till practices.

PROCEDURE:

Caraway, corriander and anise were seeded into standing stubble or chemfallow with a haybuster zero-till drill. Fertilizer at a rate of 50 lbs. of 12-51-0 was seed placed. Weed control was with Lorox (broad-leaf weeds) and Excel (grassy weed control).

The caraway was seeded with a companion crop (corriander) at a rate of 15 lbs/acre. The seeding rate on corriander was approximately 30 lbs/acre and on anise about 15 lbs/acre.

All three crops were straight combined with a floating cutterbar and air reel. They were then dried down using natural air drying.

RESULTS:

When starting this project in the spring of 1989, we made a list of comparisons we hoped to learn more about.

1989 Comparisons:

1) Attempting to establish caraway by underseeding it on a corriander field. This way if the caraway does not establish, there will still be a crop growing on the field. This has proven to be an effective way to establish Caraway in Alberta.

2) We will be able to compare a field of corriander underseeded to Caraway and one not underseeded to see if this establishment method affects yields.

3) Compare corriander on summerfallow (Chemfallow) to corriander on stubble to determine yield differences, maturity, and economic feasibility.

4) Try a completely new spice crop - Anise Seed. Initial research suggests it is better adapted to this region than is Cumin.

5) Compare the economics of growing corriander, caraway (from 23 acres established last year) and anise to that of lentils (our traditional specialty crop).

6) Further evaluation of processing and market problems which tend to be associated with new crop development.

1989 Yields of Spice and Comparison Fields

(Yield testing method - Square Metre sampling)

	Yield (lbs/acre)
Corriander on stubble underseeded to caraway	539
Corriander on stubble	697
Corriander on chemfallow underseeded to caraway	725
Anise on chemfallow	159
Caraway on fallow	535
Lentils on Stubble (Comparison field)	738
Durum on stubble (Comparison field)	1056

What Was Learned in 1989

1) Attempting to establish caraway by underseeding on a corriander field worked reasonably well. However, it may have reduced yield by 158 lbs/acre (23%). Also, the caraway did not advance as far on this field as it would have if it had been seeded alone. This practice may have promise, but needs more study.

2) Our main agronomic problem with producing spices in 1989 was with weed control. Russian thistle and flixweed were serious weed problems for which we seem to have no chemical weed control. Lorox provides no control of Russian thistle and only on minor leaf burn on flixweed. All crops were reasonably tolerant to Lorox and Excel. Both Lorox and Excel did a reasonable job of controlling the weeds listed on their labels.

3) Yields of corriander on chemfallow (725 lbs/acre) were higher than yields on stubble (539 lbs/acre). However, germination was better on the stubble field, probably because of shallower seeding on firmer ground. Corriander appears to have some drought tollerance.

4) Anise may only have limited potential in Saskatchewan. The strain we were using appears to need about 140 days to mature. The crop froze on September 11 and consequently the quality of the harvested crop was very poor. Seeding the crop on stubble and then swathing the crop before maturity may speed harvesting and prevent frost damage some years. However, in Saskatchewan, we would still harvest low quality production from time to time. The further processing potential of poor quality anise should be assessed if this crop is to have any potential in this province at all. Breeding work to get an earlier maturing variety is also essential.

5) Economics of Spice Production

Overall the economics of corriander and caraway production was in between the two comparison crops. That is, the net returns were higher than durum but lower than lentils. An important consideration when examining economics of spice production is that no Crop Insurance or government assistance is available for spice crops. This increases the risk and reduces the overall financial advantages to growing these crops.

FALLOW OR STUBBLE	CROP	YIELD	PRICE/LB.	GROSS RETURN	COSTS	NET RETURN
Stubble	Corriander	539	22	118.58	74.60	$43.98
Stubble	Lentil	738	20	147.60	76.05	$71.55
Stubble	Durum	1056	8	84.48	51.14	$33.34
Fallow	Anise	159	46	73.14	97.75	-$24.61
Fallow	Caraway	535	29	155.15	87.00	$68.15
Fallow	Corriander	725	22	159.50	74.60	$84.90

6) The major markets for spice crops in North America are very small. U.S. imports of corriander are about 4,000 M.T. annually. (about 3,000 M.T. for caraway, 1,000 M.T. for Anise) The markets can easily become oversupplied and prices are quite volitile. With this in mind, it may be better for a farmer to grow a number of different spice crops to spread the risk.

Further processing potential of spices should be assessed as a way to add value to the crop. In Saskatchewan, we will produce low quality production from time to time, further processing may be a way to extract value from lower quality product.

CONCLUSIONS

Zero-till seeding looks like a reasonably good way to establish spice crops. Shallow seeding into standing stubble gets the crop off to a quick start while providing the very tender shoots with protection from the wind. The drill also allows for the option of underseeding caraway with the corriander crop by running caraway through the mid-row banding attachment.

Weed control is probably the largest agronomic problem we have yet to overcome. Certain weed species are very difficult to control. ex: flixweed, Russian thistle, tyme-leaf spurge and sow thistle. Using chemicals like Edge (now registered for corriander), Linuron, Poast and Excel are essential to providing some weed control. However, there are some weeds that may not be controlled by these products. Therefore, growing spices on relatively clean land is important. All spice crops observed were very poor weed competitors.

All spice crops will need further evaluation to examine economic, agronomic, marketing and further processing potential. Corriander appears to be the most promising of the crops looked at so far. Unfortunately, this spice has a relatively low value and unless the value can be increased (by further processing), it may be no more profitable to grow than exisitng specialty crops.

Caraway has some potential under dryland conditions. It would be interesting to see how it performs under more normal rainfall conditions. The quality of caraway seed produced in 1989 was excellent.

Anise may have some potential if earlier maturing varieties can be found. It has potential for a relatively high price (over $1.00/lb.) It tends to suffer from heat blasting during hot, dry periods.

Cumin tends to germinate poorly under dryland conditions and suffers from heat blasting and may only be grown here if better varieties can be found. This crop has large potential markets at good prices if the agronomic problems can be overcome.

We also grew some plots of various spice and specialty minor crops in our garden this year to screen for differences between varieties and potential new crops. We learned a great deal form these plots and feel there is much room for increased research in this area, both at the farm level and from research scientists.

IMPACT

This project has generated a lot of interest at the local, regional and provincial levels. We have taken calls from interested farmers all over Western Canada. We gave interviews to several T.V. and Radio stations as well as a number of newspapers.
The project had also been discussed at local and district crop club meetings. Even though we have received considerable media coverage on the growing of these crops, we have urged farmers to be cautious in their approach to crops which still present a considerable challenge to most producers.